

REMARKS

Amendments to the Claims

Claims 10 - 12 were previously cancelled. Claims 13-19 were previously presented. Upon entry of the amendment Claims 1 - 9 and 13 - 19 are presented for consideration by the Examiner.

Interview Summary

On or about December 15, 2007, Counsel for Applicant participated in an interview with Examiner Addisu. Counsel for Applicant pointed out features of the claims that are not disclosed, taught or suggested by U.S. Publication No. 2004/0151553 to George et al. (George) or U.S. Patent No. 7,147,414 to Mast et al. (Mast). In particular, Counsel for Applicant discussed the tool configurations disclosed in George and pointed out that the Examiner's assessment of the teachings of George is incorrect. When the teachings of George are properly applied, the distinctions between the tool configuration disclosed in George and the tool configuration of Applicant's claims are clear. The arguments discussed with the Examiner are set forth in greater detail below.

On January 3, 2008, Counsel for Applicant forwarded a tool insert embodying the claimed "spot drilling insert." Counsel for Applicant hopes that a physical embodiment of the claimed spot drilling insert will assist the Examiner in visualizing the claimed configuration as distinct from the tool configurations disclosed in the cited prior art, in particular U.S. Publication No. 2004/0151553 to George et al. (George) and U.S. Patent No. 7,147,414 to Mast et al. (Mast).

Claims 13-19 were not considered by the Examiner

New claims 13-19 were presented and argued in Applicant's Response filed September 27, 2007. The Rejection mailed December 11, 2007 failed to consider or discuss the new claims. Applicant requests that claims 13-19 be considered and

allowed. The Rejection mailed December 11, 2007 was incomplete and should be withdrawn in favor of an Office Action that considers all the claims pending in the Response filed September 27, 2007.

Claim Rejections – 35 USC § 103(a)

Claims 1 - 8 are rejected under 35 USC § 103(a) as being unpatentable over George in view of Mast.

Rejected Independent Claims 1 and 5

Claim 1 recites, in pertinent part:

said drill point including a pair of substantially linear cutting edges inclined rearwardly from a chisel edge at the extreme forward end of said insert, **each said cutting edge defined by an intersection of a substantially planar flute surface and a substantially conical land surface** (emphasis added)

Claim 5 recites, in pertinent part:

said drill point including a pair of substantially linear cutting edges inclined rearwardly from a chisel edge at the extreme forward end of said insert, **each said cutting edge defined by an intersection of a substantially planar flute surface and a substantially conical land surface** (emphasis added)

Independent Claim 13

Independent claim 13 recites, in pertinent part as follows:

two diametrically opposed substantially conical land surfaces extending rearwardly and outwardly from a tip of said drill point, each said land surface having an axis of curvature offset relative to said rotational axis, each said land surface radially approaching said axis of rotation in a direction opposite said cutting direction;

two diametrically opposed flutes, each said flute defining a linear trough and comprising a substantially planar first flute surface intersecting one of said land surfaces to form a cutting edge, said linear troughs arranged to converge as they approach said tip and angularly overlap behind said tip.

Each of independent claims 1, 5 and 13 recites a specific structure for the claimed drill point that is not disclosed, taught or suggested by George or Mast, either alone or in combination.

In the rejection issued December 11, 2007, the Examiner relies heavily on George to teach the specific structures and relationships recited in Applicant's independent claims 1 and 5. As demonstrated below, George fails to disclose, teach or suggest the specific configurations and relationships recited in Applicant's claims 1 and 5. *Claims 13-19 are ignored in the rejection dated December 11, 2007.*

Teachings of George

The Examiner's assessment of the teachings of George is unsupported or inaccurate in at least the following respects:

- The Examiner argues that George teaches "a pair of linear cutting edges (36)." George **clearly teaches** that the cutting edge portions 36 extending from the central straight chisel edge 41 are "curvilinear", not linear as required by Applicant's claims. See George, Figures 3a and 4;
- The Examiner argues that George teaches "a planar first flute surface (33)." It is important to note that the exact configuration of flute surface 33 is not discussed in George, so the Examiner's statement regarding its configuration is unsupported. It appears from Figures 2, 3, 3a, and 4 that the flute surface 33 is arcuate, not planar. See, in particular, Figure 4;
- The Examiner argues that George teaches a "conical land surface (45)." George refers to surfaces 45 as "peak surfaces" and fails to teach or suggest that these surfaces are "conical" as required by the claims. Further, the detailed discussion of the configuration of peak surfaces 45 with respect to other structures of the tool suggest that the peak surfaces 45 cannot be "conical" as required by the claims. See George, column 5, lines 23-43.
- The Examiner argues that George teaches "each said land surface (45) radially approaches said axis of rotation in a direction opposite said cutting direction."

George does not disclose, teach or suggest that peak surfaces radially approach the axis of rotation of the drill. The peak surfaces 45 are described as "upwardly inclined", not conical and no relationship is specified in George between the peak surfaces and the axis of rotation.

- The Examiner argues that George teaches the *acute* included angle between linear cutting edges specified in Applicant's claims 2, 3, 7, and 8. In George, the angle gamma, cited by the Examiner "represents the angle of inclination of the peak surface 45 and associated first cutting edge portion 36 relative to the second straight portion 35 of the cutting edge (the horizontal)." George, column 5, lines 37-43. The angles described in George clearly teach an *obtuse* included angle between *curvilinear* cutting edge portions 36. This is in distinct contrast to the *acute* included angles between *linear* cutting edges recited in Applicant's claims 2, 3 and 7, 8. The Examiner's figure on page 4 of the rejection demonstrates that the *smallest* angle disclosed in George is an angle of 90°. George teaches away from increasing the value of gamma (thereby decreasing the included angle between curvilinear cutting edges 36, because to do so "weakens the peaked tip of the drill." George, column 5, lines 50-54.

George does not support the Examiner's arguments. George does not disclose, teach or suggest the tool configuration recited in applicant's claims.

Teachings of Mast

It is important to note that Applicant previously overcame a 35 U.S.C. §102 rejection based on the teachings of Mast. In Applicant's previous Response, filed September 27, 2007, Applicant clearly demonstrated that Mast did not disclose, teach or suggest what the Examiner argued it did with respect to Applicant's claims. Thus, the Examiner has essentially admitted that Mast does not disclose, teach or suggest the configurations and relationships set forth in Applicant's claims.

Mast does not cure the deficiencies of George as a primary reference. As a result, the Examiner's proposed combination of George and Mast fails to disclose, teach or suggest the configurations and relationships recited in claims 1-9 and 13-20.

Legal Requirements for Rejection Under 35 U.S.C. §103

MPEP §2142 sets forth the criteria for establishing a prima facie case of obviousness under 35 U.S.C. §103 as follows:

To reach a proper determination under **35 U.S.C. 103**, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

The Examiner's rejection relies on George to teach essentially all aspects of the claims except the use of a drilling insert in a tool holder. As previously discussed, George fails to disclose, teach or suggest many features and relationships recited in Applicant's claims. The Examiner relies on Mast only for its teaching of a drilling insert in combination with a tool holder.

The Examiner's abbreviated discussion assumes that the features identified in the rejection are actually present, but fails to provide support for this assumption. As shown in the above discussion, and during the interview between Applicant's counsel and the Examiner, the features of the claims are not in fact present, taught or suggested in George.

The Examiner's proposed combination of George and Mast fails to present a prima facie case of obviousness meeting the standards set forth in the MPEP and relevant precedent. Applicant's independent claims 1, 5 and 13 are patentable in view of the cited prior art.

Claims 2-4 depend directly or indirectly from claim 1 and are patentable for at least the reasons stated in support of claim 1.

Claims 6-9 depend directly or indirectly from claim 5 and are patentable for at least the reasons stated in support of claim 5.

Claims 14-19 depend directly or indirectly from claim 13 and are patentable for at least the reasons stated in support of claim 13.

Further Features of the Dependent Claims

Claim 4 recites in pertinent part "wherein said drill point defines a flute between said substantially planar first flute surface and a substantially planar second flute surface." George and Mast teach only curved flute troughs and do not disclose, teach or suggest flutes comprised of planar flute surfaces. The Examiner's proposed combination of George and Mast does not disclose, teach or suggest the recitations of claim 4. Claim 4 is patentable for at least these additional reasons.

Claim 6 recites in pertinent part "wherein said substantially conical land surface has an axis of curvature that is offset from the axis of said shank." George does not disclose a conical configuration for the land surfaces of a drill point or any specific relationship between the land surfaces and the axis of the disclosed drill. Neither George nor Mast, either alone or in combination disclose, teach or suggest the land surface configuration and relationships recited in claim 6. Claim 6 is patentable over the Examiner's proposed combination for at least this additional reason.

Claim 9 recites in pertinent part "wherein said drill point includes two linear V-shaped flutes defined by said substantially planar flute surface and a second substantially planar flute surface meeting at a radius." Neither George nor Mast, either alone or in combination disclose, teach or suggest flutes formed of planar surfaces as

recited in claim 9. Claim 9 is patentable over the Examiner's proposed combination for at least this additional reason.

New Claims 13-19

Claim 13 recites in pertinent part as follows:

two diametrically opposed substantially conical land surfaces extending rearwardly and outwardly from a tip of said drill point, **each said land surface having an axis of curvature offset relative to said rotational axis, each said land surface radially approaching said axis of rotation in a direction opposite said cutting direction;**

two diametrically opposed flutes, each said flute defining a linear trough and **comprising a substantially planar first flute surface intersecting one of said land surfaces to form a cutting edge,** said linear troughs arranged to converge as they approach said tip and angularly overlap behind said tip (emphasis added)

Claim 13 recites "two diametrically opposed substantially conical land surfaces" and "each land surface having an axis of curvature offset relative to said rotational axis, each said land surface radially approaching said axis of rotation in a direction opposite said cutting direction." Claim 13 specifies a configuration for the recited land surfaces and a relationship between the recited land surfaces and a rotational axis of the claimed spot drilling insert. The recited structure and relationships are not disclosed, taught or suggested by George or Mast, either alone or in combination as discussed previously with respect to claims 1, 5 and 6.

Claim 13 also recites "two diametrically opposed flutes, each said flute defining a linear trough and comprising a substantially planar first flute surface intersecting one of said land surfaces to form a cutting edge." Claim 13 recites a specific configuration for the linear troughs and specifies a relationship between those troughs and other structures of the drill point. The structures and relationships recited in claim 13 are not disclosed, taught or suggested by George or Mast, either alone or in combination, as previously discussed with respect to claims 1 and 5.

Claim 13 is patentable over the Examiner's proposed combination of George and Mast for at least these reasons.

Claims 14-19 depend directly or indirectly from claim 13 and are patentable for at least the reasons stated in support of claim 13.

Claim 14 recites, in pertinent part "wherein said linear troughs are not parallel to said cutting edges." The relationship between the recited linear troughs and cutting edges specified in claim 14 is not disclosed, taught or suggested by George or Mast, either alone or in combination. Flutes including planar flute surfaces as recited in Applicant's claims, allow the flute trough orientation to be non-parallel relative to a cutting edge formed at the intersection of a flute surface and a land surface, *and still form a substantially linear cutting edge.*

Claim 15 recites, in pertinent part "wherein each said flute comprises a substantially planar second flute surface meeting said first substantially planar flute surface at a radius to form an obtuse angle." Neither George nor Mast, either alone or in combination disclose, teach or suggest flutes formed of planar flute surfaces as recited in claim 15. Claim 15 is patentable over Mast for at least this additional reason.

Claim 17 recites, in pertinent part "wherein said tip has a diameter and the axis of curvature of said land surfaces is offset from said rotational axis a distance equal to approximately 10% of said diameter." Claim 17 recites a specific relationship between a diameter of the drill tip and the offset of the land surfaces relative to the rotational axis of the drill point that is not disclosed, taught or suggested by George or Mast, either alone or in combination.

Claim 19 recites, in pertinent part "wherein said first flute surfaces are not parallel to a center plane of said insert body and said linear troughs are not parallel to said cutting edges." Claim 19 recites specific relationships between structures of the claimed insert body that are not disclosed, taught or suggested by George or Mast, either alone or in combination.

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For all the foregoing reasons, Applicant respectfully requests allowance of claims 1-9 and 13-19.

Respectfully submitted,

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